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FOREST RESEARCH NOTES

NORTHEASTERN FOREST EXPERIMENT STATION

Upper Darby, Pennsylvania



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Converting Factors For Stacked Wood

Though the "cord" is used as a standard unit of measure for stacked wood, there is much confusion as to what a cord is and how it can be properly converted to other units of measure. The amount of solid wood in a pile varies greatly depending on the size, straightness, and evenness of the material in the pile, and also on the closeness of stacking.

Fuelwood, chemical wood, and pulpwood are usually sold by the cord, but wood so used is not uniformly piled. The bark may be on or off; and in the Northeast the bolts may be 48, 50, 52, or 60 inches long. In common usage, the cord measure is used without much discrimination, although in contracts it is customary to use the term "unit" for bolt lengths other than 48 inches. The term "rough" and "peeled" are used to indicate whether the bolts are piled with the bark on or off.

In an attempt to reduce this confusion, we have developed factors for converting from one unit of measure to another (table 1). The basic observations came from a study made in cooperation with the Armstrong Forest Company of Johnsonburg, Pa., and the Allegheny National Forest. The following average factors are obtained from dot-grid counts* on stacked wood:

<u>Standard cord</u> <u>of stacked wood</u>	<u>Cubic feet</u> <u>of solid wood</u>
Unsplit, rough	86.38
Split, rough	76.88
Unsplit, peeled	90.20

*Keepers, C. H. A new method of measuring actual volume of wood in stacks. Jour. Forestry 43: 16-22. 1945.

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TABLE 1---Conversion factors for stacked wood

Conversion:		Standard cord						Unit with 50-inch bolts				Unit with 52-inch bolts				Unit with 60-inch bolts				Cubic feet			
FROM	TO	Rough		Peeled		Rough		Peeled		Rough		Peeled		Rough		Peeled		Rough		Peeled		Solid wood	Gross
		Round	Split	Round	Split	Round	Split	Round	Split	Round	Split	Round	Split	Round	Split	Round	Split	Round	Split				
Standard cord	{	Rough	Round	1.00	1.12	0.96	1.08	0.96	1.08	0.92	1.03	0.92	1.04	0.88	0.99	0.80	0.90	0.77	0.86	86.38	128	76.88	
			Split	.89	1.00	.85	.96	.85	.96	.82	.92	.82	.92	.79	.88	.71	.80	.68	.77				
	{	Peeled	Round	1.04	1.17	1.00	1.12	1.00	1.13	.96	1.08	.96	1.08	.92	1.04	.84	.94	.80	.90	90.20	133-1/3	80.28	
			Split	.93	1.04	.89	1.00	.89	1.00	.85	.96	.86	.96	.82	.92	.74	.84	.71	.80				
50-inch bolts	{	Rough	Round	1.04	1.17	1.00	1.12	1.00	1.12	.96	1.08	.96	1.08	.92	1.03	.83	.94	.80	.90	89.98	138-2/3	80.08	
			Split	.93	1.04	.89	1.00	.89	1.00	.85	.96	.86	.96	.82	.92	.74	.83	.71	.80				
	{	Peeled	Round	1.09	1.22	1.04	1.17	1.04	1.17	1.00	1.12	1.00	1.13	.96	1.08	.87	.98	.83	.94	93.96	160	83.63	
			Split	.97	1.09	.93	1.04	.93	1.04	.89	1.00	.89	1.00	.86	.96	.77	.87	.74	.83				
52-inch bolts	{	Rough	Round	1.08	1.22	1.04	1.17	1.04	1.17	1.00	1.12	1.00	1.12	.96	1.08	.87	.97	.83	.93	93.56	138-2/3	83.29	
			Split	.96	1.08	.92	1.04	.93	1.04	.89	1.00	.89	1.00	.85	.96	.77	.87	.74	.83				
	{	Peeled	Round	1.13	1.27	1.08	1.22	1.09	1.22	1.04	1.17	1.04	1.17	1.00	1.12	.90	1.02	.87	.97	97.72	160	86.97	
			Split	1.01	1.13	.96	1.08	.97	1.09	.93	1.04	.93	1.04	.89	1.00	.81	.90	.77	.87				
60-inch bolts	{	Rough	Round	1.25	1.40	1.20	1.34	1.20	1.35	1.15	1.29	1.15	1.30	1.10	1.24	1.00	1.12	.96	1.08	107.95	160	96.10	
			Split	1.11	1.25	1.07	1.20	1.07	1.20	1.02	1.15	1.03	1.15	.98	1.10	.89	1.00	.85	.96				
	{	Peeled	Round	1.31	1.47	1.25	1.40	1.25	1.41	1.20	1.35	1.20	1.35	1.15	1.30	1.04	1.17	1.00	1.12	112.75	160	100.35	
			Split	1.16	1.31	1.11	1.25	1.12	1.25	1.00	1.20	1.00	1.20	1.03	1.15	.93	1.04	.89	1.00				
Cubic feet of solid wood				86.4	76.9	90.2	80.3	90.0	80.1	94.0	83.6	93.6	83.3	97.7	87.0	108.0	96.1	112.8	100.4	--	--		

These three factors are observed values, and they are subject to measurement and sampling errors that could materially affect the converting factors in table 1. We have no basis for saying how widely they apply.

Gross cubic feet per unit was calculated as 128, 133-1/3, 138-2/3, and 160 for 48-, 50-, 52-, and 60-inch bolts respectively. These numbers were combined as products or ratios, using two or more at a time to obtain the entries of table 1. For example, the ratio $86.38/76.88 = 1.12$ can be used to convert cords or units (otherwise the same) from round wood to split wood. Or $160/128 = 1.25$ can be used to convert units of 60-inch wood to cords of 48-inch wood, other factors being the same. These factors ignore any ef-

fect that length of bolt may have on the solid wood content of a stack.

Factors reported in table 1 have been given a careful arithmetic check; yet they should be used with caution until their appropriateness has been more fully established. The wood and piling of this cooperative study may not be representative for other stands with different species or for different standards of stacking.

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